AMERICAN VETERINARY REVIEW,

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EDITORIAL.

FIRST INTERNATIONAL CONGRESS ON TUBERCULOSIS.—Initiated by a veterinarian, it is organized by Prof. Verneuil—its importance—gathering of scientists, comparative pathologists, physicians and veterinarians—almost all Europe represented—even the United States—veterinarians for the first time are admitted to equal rights—admission made by Prof. Verneuil—Chauveau is the President of of the Congress—a compliment to the profession he represents as well as to the scientists—veterinarians of France can realize the advantages of this recognition—thanks to the veterinary profession by Prof. Verneuil—the reports of the Congress will be published later on. SURGICAL INTERFERENCE IN LARYNGEAL PARALYSIS PRODUCING ROARING.—A tedious affection that no one cares to encounter—difficulties of positive pathology—principally laryngeal, however—Gunther's attempt for its relief—publication in the *Veterinary Journal* of July—four operations indicated—they are simple—all are preceded by one for the opening oi the larynx—this is of great value—assisting in a positive pathological diagnosis—it is harmless—the larynx is no more *terra incognita*. ANTIRABIC INOCULATION OF HERBIVOROUS ANIMALS.—Pasteur's investigations followed by others—Prof. Galtier, of the Lyons school, one of the first—his labors and achievements cannot be ignored—Pasteur's treatment objectionable and difficult to the ordinary practitioner—intra-venous injection is simple—and as certain—the experiments of Galtier confirmed at the Pasteur Institute—all veterinarians ought to try it—good results obtained—it will protect all ruminants—perhaps the horse—experiments to be made. OUR PRIZE.—We are prepared to fulfil our engagements—let the committee report.—SPECIAL BACK NUMBERS.

FIRST INTERNATIONAL CONGRESS ON TUBERCULOSIS.—The first international congress organized for the discussion of the subject of tuberculosis was held near the close of last month, as had been previously announced in the REVIEW. The meeting was organ-

ized upon the initiative suggestion of a veterinarian, Mr. Butel, by Dr. Verneuil, and was held in Paris from the 25th to the 31st of last month; and although, or perhaps because, it was the first gathering of the kind, it proved to be an occasion of great interest, and accomplished an apparently decided success. Many points of special importance and widespread general concern were adduced and discussed, and valuable conclusions were in many instances established. We hope to be able, in our next number, to lay before our readers some of the more important and interesting of the papers which were presented and considered.

The importance of the objects contemplated and the work accomplished by this congress may perhaps be somewhat accurately estimated by a consideration of the extent of the territory and the number of the nationalities represented by the participating members. Thus, all the faculties of medicine throughout France, together with numerous other of the scientific organizations of that Republic, may be cited as among its constituents; and with these were associated, in close co-operation, kindred savans from the academies of medicine of New York, and such diverse and distant municipalities as Turin, Bucharest, Granada, Madrid and Athens, with medical societies from England, Denmark, Italy, Belgium, Holland, Switzerland, and still other lands. And what is most notable of all—for the indication which it offers of the advent of an era of good feeling and practical scientific good sense—it was not alone the practitioners in human medicine who were active in engineering the working of the congress, but the kindred branch, the veterinary sister, was for the first time admitted to an equal seat and voice in the deliberations of the assemblage. And this is a noticeable fact, truly, albeit the occasion was inaugurated for the express purpose of elucidating all attainable truth in respect to a disease and its treatment which is of equal interest, and so recognized on every hand, to all the varied families of sufferers from its mortal ravages, whether amongst human, bovine or other victims.

This was indeed, for us, *the* circumstance of the congress, and though it was only rendering due honor to the claims of veterinary medicine, it was an event worthy of being noted in our pro-

fessional annals. The three veterinary schools of France, with nearly all the French veterinary societies, and the veterinary colleges of Budapest, Glasgow, Bruxelles, Utrecht, and even veterinarians from the United States, were counted amongst the adherent members of this grand reunion of comparative pathologists—a fact so neatly and appropriately acknowledged by Prof. Verneuil in the following words, which we quote from his discourse of inauguration. Said Dr. V.:

"Comparative pathology, then, is a common field which you have seen cultivated in the last few years with so much talent by Bouley and Vulpian, and however it is to-day, certainly, the first time, that physicians and veterinarians come together, no longer separately but in large cohorts, to unite their efforts in studying one of the too common affections which has the fatal power to decimate as well man and his servants and to transmit itself without mercy from one to the other."

While waiting the receipt of the various papers which we are expecting from the seat of the congress, we may improve the occasion by responding to the Doctor and indulging in our own expressions of gratification that at length veterinarians and medical men have combined their forces with a mutual purpose on a common battle-field, and that we may now safely anticipate in our own land the recognition and position we may justly claim.

The nomination of Professor Chauveau, the eminent physiologist and anatomist, to the presidency of the organization, is not a specially remarkable circumstance, but may be accounted to be a simple, well-merited honor, due to the man and scientist. But the choice of Professor Chauveau, the VETERINARIAN, the Inspector of French Veterinary Schools, to the post of honor should be proudly acknowledged for the compliment which it involves for the entire veterinary fraternity, albeit the selection might well be wholly due, at another time, to the personality of the man himself, without reference to accessory circumstances.

The veterinary fraternity in France are especially entitled to congratulate themselves upon this recognition of one who so fitly and well represents their standing and character.

That the events now recorded are the natural and incidental

evidence of the fact that the service which it is in the power of the veterinarian to render in the elucidation of questions pertaining to the domain of comparative pathology are now thoroughly appreciated, becomes further evident from the language of Dr. Verneuil, when he says:

"Let us who are professors and members of this faculty thank the veterinarians for their happy initiative and the warm desire they have exhibited in coming among us."

If to the numerous objects for which our medical conventions are usually called—such as that of stimulating new investigations and prosecuting pending researches, or settling questions of occasional professional interest—is to be added that of awakening a drowsy public from their slumbers, and of dissipating the fancies of dreamy specialists, there can be no doubt that the first international congress for the discussion of tuberculosis has fully succeeded in its purpose, though only an incidental one, as the minutes of its transactions, soon to be printed, will doubtless show.

Surgical Interference in Laryngeal Paralysis Producing Roaring.—The intractability to treatment which characterizes the evil of chronic roaring renders it a serious annoyance to many practitioners who are called upon for its treatment; and adding to this circumstance its liability to involve the owners of the affected animals in financial loss, it obviously constitutes an affection which not many persons, either veterinarians or owners, are over-anxious to encounter. In its treatment mere palliative results are usually the best that can be attained, and even these are not always sure of accomplishment. The various pathological changes which give rise to the peculiar symptoms of noisy respiration, and at times of threatened suffocation, are not always of easy and positive detection, and even the question of their location, and whether they are specially to be looked for in the laryngeal space, or only affect the organ thus situated by abnormal action, remains one which as yet involves a degree of uncertainty to which many errors of diagnosis are to be attributed. In other words, it cannot always be determined whether the trouble is located in the larynx or should be looked for elsewhere in the respiratory apparatus.

It is still true, however, and it has been proven by the results of many post mortem examinations, that the diagnosis of chronic roaring which refers the symptoms to an affection of the larynx resulting from a diseased condition of the left laryngeal nerve, and hence of all the tissues through which it is distributed, will in a majority of cases prove to be correct.

Gunther claims that out of one hundred roarers this lesion is present in ninety-six cases, though this is by many considered to be an exaggerated estimate. In view of the frequent occurrence of this disease, and with the knowledge we possess of the physiological and pathological phenomena with which we are familiar, viz., the paralysis of those laryngeal muscles, it is a somewhat surprising fact that the therapeutics of this affection should have been so nearly overlooked as has been the case until recently. In fact, with the exception of some accounts of Gunther, Jr., who some fifty years ago, we believe, cured roarers by the entire or partial removal of the arytenoid cartilage through the tracheal opening, or by the division or even the removal of one of the vocal cords, there is in veterinary literature but little of value on the subject.

Professor Frederick Smith has done well, then, in favoring the profession as he has done in his paper in the *Veterinary Journal* for July, with his views in relation to the various modes of operating for the relief of roaring, especially as, after all, there is much comparative simplicity in all of them, and, we believe, no difficulty of a very serious character to be encountered in any. These operations for the removal of the noise caused by laryngeal paralysis, as mentioned by Professor Smith, are four in number, and comprise: 1st. Excision of the left vocal cord; 2d. Partial excision of the arytenoid cartilage, together with the removal of the left vocal cord; 3d. Opening of the crico arytenoid articulation and production of anchylosis; and 4th. Excision of the inferior face of the larynx, with removal of the muscles and portion of the cricoid cartilage, or permanent laryngo-tracheotomy. The mode of entering the larynx is simple, but is not without its importance, since whatever may be the subsequent steps of the operation, this opening of the larynx must answer for all. When the

animal is cast he must be placed well on his back, with the limbs perfectly vertical, "(*) the head extended and the whole laryngeal region perfectly exposed. The hair having been clipped closely, the finger endeavors to feel for the cricoid cartilage or crico-thyroid ligament. This is a very difficult matter in animals which have the sterno thyroid muscle well developed; but if the head be slightly raised and the neck made less tense, the parts may perhaps be defined. As a surgical landmark, take the parotid edge of the inferior maxilla; a line drawn along this to the larynx is just opposite the crico thyroid ligament; fix and steady the part, and make a longitudinal incision through the skin exactly in the central line, and carry it as far as two inches. Next make an incision in the sterno thyroid muscle, tearing—rather than cutting—its fibres so as to avoid hemorrhage as much as possible. Observe that the incision in this muscle corresponds in size to that made in the skin. Some tissue, including fat, will now be felt covering the face of the larynx. The finger should carefully examine the part, making out well crico thyroid ligament, the cricoid cartilage and the crico tracheal ligament in turn; clear all the tissue away until the above ligaments and cartilage are exposed, but on no account open the larynx until all the hemorrhage has stopped (tying or twisting small spirting vessels, with this object); for blood passing into the larynx is very obstructive to further work. The larynx is now opened by a longitudinal incision, extending from the thyroid cartilage to the trachea and the wound held apart by retractors."

This preliminary step is of the greatest importance, as it permits a positive diagnosis, by which it can be determined whether the roaring of the patient is due to *laryngeal paralysis* and amenable to treatment. A number of patients are reported to have been relieved by this operation in England, and it will not be long on this side of the Atlantic, where the disease is quite common, before it is submitted to trial. But whatever may be the result as respects the roaring, a new field will have been discovered for veterinary surgery; and in the words of Fleming, "it is now well

(*) *Veterinary Journal*, July, 1888.

established that the interior of the living horse's larynx need no longer be regarded as a *terra incognita* to the veterinary surgeon, nor remain exempt from operative treatment."

Antirabic Inoculation of Herbivorous Animals.—Since the investigations and discoveries instituted by Pasteur in reference to hydrophobia, and the treatment initiated by him and his co-laborers in cases of persons exposed to that disease, by inoculation through the bites of rabid animals, numerous other investigators have entered the same field of observation and research. But among all the students of this peculiar disease not one, probably, has reached more striking and valuable results than Professor Galtier, of the Lyons Veterinary School in France. Personally we are strong believers in the results obtained by the Pasteur treatment of threatening or impending rabies, but it is not the less incumbent on us, as veterinarians, to acknowledge our conviction of the value of the work realized by Professor Galtier. We believe that his labors and achievements possess a character and contain a promise of developments of a magnitude and interest entirely too great to be overlooked or depreciated.

We refer especially now to the application of a simple and successful form of treatment in cases of wounds inflicted by rabid upon other and healthy animals. The point is of special interest in respect to this class of victims from the fact that the results of the inoculation are more likely to be fatal than in the case of the human subject, who, when bitten, possesses the power which the dumb victim lacks, of giving due information of the calamity which has overtaken him.

It is true that Pasteur has given impunity to dogs in similar cases, and it is upon his method of treatment that dependence has been placed for the prophylactic effects which have been so widely beneficial. But there are difficulties attending the application of the Pasteur method of treatment which form serious obstacles to its application, and almost or quite preclude its availability in the ordinary practice of the country veterinarian, and especially in those sections of the country where large herds or flocks of animals are found. Cattle and sheep are favorite and

common objects of attack by rabid dogs, and the instances are not rare of the infliction of widespread loss by the destruction of valuable animals following the uncontrolled and promiscuous assault upon his fellow quadrupeds by a stray hydrophobic canine.

A simple form of treatment as a prophylactic measure is proposed by Professor Galtier in the intra-venous inoculation of a small quantity—from 1 to 1½ cubic centimetres—of a pure solution of rabid virus. This discovery of the Professor was published in the "Comptes Rendus of the Academy of Sciences in Paris," in 1881, but it failed to receive the attention it deserved. It seems to have been condemned on scientific grounds as in some way unreliable, by reason of some errors of manipulation in the reported experiments.

Since that period, however, a change of sentiment has occurred. More attention has been bestowed on methods and greater caution exercised in respect to details, with the effect of securing assured and uniform results—some of the eminent men connected with the Pasteur Institute being among the investigators—and to-day the *prophylaxy of rabid wounds, at least in the larger and smaller ruminants, by intra-venous injection, is a fact established and accepted.*

As such an operation not only does not communicate hydrophobia to these animals, but on the contrary gives them immunity from the disease, the application of this harmless operation in places where large numbers of animals might be exposed could not be considered a wise measure, even when no wound had been inflicted, and as a preventive means, of the nature of a vaccination, it is a question which it is scarcely the time or yet in order to consider. But as to its application when wounds have already been received, it can no longer be ignored or avoided by the veterinarian. As its efficacy survives for at least a period of twenty-four hours after the inoculation, there is nearly always sufficient time for the necessary preparation.

The treatment is simple. It consists in the direct introduction, by means of the Pravat syringe, of from 1 to 1½, and even 2 cubic centimetres of a solution of pure rabid virus, made with

sterilized liquid and a piece of the rachidian bulb of a rabid animal. The injection is made in the jugular vein, and is repeated at intervals of from four or five to twenty-four hours. No bad results have yet been observed, and the toxic symptoms said to have been detected by Galtier after injections of large quantities of the virus, are denied by Nocard and Roux on the strength of their own experiments.

These last named gentlemen report similar results obtained in experimenting with a horse which had been bitten in the nose. He was treated with 1.30 c.c. of virus, in five injections, administered at intervals of two days, and remained healthy seventy days later. This experiment is well worth repeating and retesting, and if successful it would place in our hands a control over the remainder of our domestic animals such as we have already acquired over the herbivorous.

Our Prize.—The time has now arrived, we believe, for the fulfillment of the conditions assumed by the staff of the Review in their proffer of a prize for the successful competitor for such a literary and professional distinction. We received two papers, and they were duly published in the May and June numbers of the present volume, and it remains now for the committee of award to notify us of their verdict. Professor R. Huidekoper as chairman, Dr. J. C. Myers, Sr., A. A. Holcombe, L. Howard and D. J. Dixon form that committee, and we are pleased now to remind them of what remains for them to do. We shall of course look to Prof. Huidekoper for the decision, which will appear in the Review as soon as we are notified of it.

Special—Back Numbers.—One of our subscribers, desiring to make his ninth volume of the Review complete, is lacking the numbers for July, 1885, and January and February, 1886. If any of our readers have these numbers on file, and can spare them, this subscriber will thank them very much if they will forward them to the office of the Review, at our expense.

ORIGINAL ARTICLES.

THERAPEUTIC PROGRESS.

SOME RECENT OBSERVATIONS UPON, AND EXPERIMENTS WITH, IMPORTANT VETERINARY REMEDIES.

Reviewed by Roscoe R. Bell, D.V.S., Brooklyn.

THE PHYSIOLOGICAL ACTION AND THERAPEUTICAL USES OF ESERINE IN THE HORSE.

In an interesting article contributed to the April number of the *Veterinary Journal* by Prof. Fred. Smith, of the English Army Veterinary School at Aldershot, the writer gives the results of many experiments made by himself and assistant, Professor Chas. Rutherford, with this powerful drug. Considering the length of time which it usually takes to produce catharsis in horses, and the very many instances in which an immediate action is of vital importance, these tests cannot fail to be of great practical value to veterinarians everywhere.

He says the drug is derived from the physostigma venenosum, or Calabar bean, which is indigenous to Western Africa. It contains two alkaloids—eserine or physostigmine and calabarine. The two alkaloids possess different properties: physostigmine or eserine contracts the pupil when applied locally to the eye, causes contraction of voluntary and involuntary muscles, and in large doses produces paralysis of respiration; while calabarine produces symptoms of tetanus, closely allied to those brought on by strychnia. The preparations of eserine which Smith employed were the sulphate, salycilate, and the latter combined with pilocarpine. The sulphate appeared to produce more colicy pains than the salycilate, while the latter, combined with pilocarpine, was more efficient and required a smaller dose. The dose depends upon the size of the horse and the manner of administration. He injected it both hypodermically and intratrachically, and prefers the latter method, giving the following advantages: It causes less pain than when injected beneath the skin; it is more rapidly absorbed; it acts more quickly; and there is less chance of loss of

the fluid if the head be elevated for two or three minutes after injecting into the trachea, so as to prevent the solution dribbling back through the nostrils. For a medium-sized horse the dose may be regarded as one and a half grains, while two grains will answer for the largest animals; both of these doses should be combined with three grains of pilocarpine. Smaller doses (as one grain of eserine) will in the majority of cases prove useless. Eserine is soluble with difficulty in water, and for the required dose six or eight drachms of distilled water will be necessary. The amount of fluid which may be injected into the trachea without any evil effects is therefore considerable, and it is very quickly absorbed from the delicate mucous surface, while if subcutaneously administered there is always great loss of fluid where so much is necessary. The solution of the drug is facilitated by using warm water, the small tabloid being placed in a two-ounce ointment pot or other suitable vessel, a little water added, the tabloid crushed with a small glass rod or other instrument, more water being added, with continuous stirring, until the whole is dissolved.

When the drug is introduced beneath the skin we may expect it to act in about forty to sixty minutes. When intratrachially injected, the action may commence in twenty to twenty-five minutes; it is rarely delayed beyond an hour, while beneath the skin it has remained for an hour and a half before manifestations of its action were noticed.

The physiological action of eserine alone is described as follows: "The earliest indications we have of the action of the drug are loud intestinal murmurs, passage of flatus, with slight colicy pain; shortly this is followed by evacuation of the contents of the rectum, and the motions then pass at intervals of a few minutes, each becoming gradually softer, more watery, less formed in balls, until we reach the stage when the evacuations are moist and fluid, exactly representing cow's fæces. All this time the abdominal disturbance has become greater, the animal lies down, but seldom rolls, the intestinal murmurs are louder, the passage of flatus almost continuous, straining marked, fæces are voided with great rapidity, often ejected with force, and several ounces

of a brown colored fluid will at this time accompany each motion. About two to two and a half hours from the time of injection the effects are commencing to pass off, and during this short time an almost incredible amount of fæces will have been excreted. Details on this point will be given below. Those who have had no previous experience of the drug and the results obtained will regard it as magical and marvelous."

From this it would appear that in eserine we have a drug of the highest value in the treatment of intestinal obstruction, and even though the condition be that of intususception or valvulus, the violent peristalsis would have more of a tendency to overcome the accident than anything possibly in the pharmacopœia. More especially is it of value since we possess nothing whereby the evacuation of the bowels can be accomplished in less than twenty-four hours, and in many of our cases every hour's delay is an element of the most serious danger.

The symptoms produced when pilocarpine is combined with eserine, in addition to those detailed as being produced by eserine alone, are salivation of more or less intensity, and increased intestinal peristalsis, with no increase of pain. Salivation is sometimes extreme, and usually commences in three to five minutes after administration; the secretion pours from the mouth, the horse is constantly slobbering and moving the tongue, and large quantities of saliva are swallowed. This salivation need not cause alarm, as it is the physiological action of the pilocarpine. The quantity of saliva swallowed and the stimulation of the pancreatic secretion may in the intestinal canal act most usefully, both mechanically and chemically.

A point of great importance is that eserine may be administered even after other purgatives have been given, without destroying or increasing the action of either.

Prof. Smith concludes that the action of eserine on the intestinal canal of the horse is due (1) to an increase of the peristaltic action caused by the influence of the drug on involuntary muscular fibres, and (2) to an increase in the fluids secreted from the mucous membrane of the intestines.

The experimenter appends to his article some observations

obtained from its practical use, which will pretty clearly demonstrate its value and indications:

A horse received 1½ grains of eserine subcutaneously; it acted in twenty-five minutes, and produced in the first hour seven evacuations, in the second hour seven, the effects passing off in two hours and ten minutes.

A horse received 1½ grains of eserine hypodermically, which took twelve minutes to act, producing seven evacuations in the first hour, and then terminating.

Another horse received 1½ grains of salycilate of eserine hypodermically, producing a free action of the bowels in one hour. This case terminated fatally from ruptured stomach, and thus it was demonstrated that eserine could act upon the large intestines in spite of the shock to the abdominal nervous system which a ruptured stomach causes.

A pony received 1 grain of eserine hypodermically; three evacuations were produced in fifty minutes, and in eighty minutes from the time of injection eight evacuations had occurred. The case was a fatal one, the cause of obstruction being due to a small diaphragmatic hernia. Had the gut not been nipped so tightly, there is reason to believe the increased peristalsis might have withdrawn it.

A horse received a few drops of a solution of eserine into the conjunctival sac; it shortly produced contraction of the pupil, which lasted fully two days.

A horse received 1½ grains of eserine by injection into the trachea; it took seventeen minutes to act, and produced in the first hour twelve evacuations, weighing 11 lbs., 13 oz., and a considerable quantity of flatus. The action then passed off.

A horse received 1 grain of eserine hypodermically; it took forty-two minutes to act, and produced only one evacuation in one hour, accompanied by a considerable quantity of flatus.

The same horse received 1 grain of eserine and 3 grains of pilocarpine by injection into the trachea; it took twenty-one minutes to act. In the first hour, counting from time of injection, it produced fourteen evacuations, weighing 30 lbs., 6 oz.; in the second four evacuations, weighing 7 lbs., 6½ oz., and in the third

hour two evacuations, weighing 2 lbs., 13½ oz.,—in three hours a total of 40 lbs., 10 oz. of egesta.

In comparing these two cases the value of pilocarpine in addition to eserine is clearly demonstrated.

A horse received 1½ grains of eserine by the trachea; it acted in forty-one minutes, and produced in the hour five evacuations, and during the second hour four evacuations. The weight was unfortunately not obtained, but the quantity of egesta completely filled a stable bucket. The case was one of most obstinate constipation, and had received six drachms of aloes previously, which ultimately acted at the expiration of the usual time.

Another horse received 1 grain of eserine with 3 grains of pilocarpine by the trachea, which acted in one and a half hours, producing in two hours and a half from the time of injection eight evacuations, weighing 26 lbs., exclusive of loss. The pilocarpine produced its salivating effects in four minutes from the time of injection.

A horse received by the trachea 2 grains of eserine and 3 grains of pilocarpine, the case being an exceptional one of intestinal obstruction. The drug acted in twenty minutes, there being twenty-one evacuations in one and a half hours, which were accompanied by the most intense straining we have ever yet witnessed from eserine. The relief to the intestinal pain was considerable, and in a short time it entirely ceased. The case terminated fatally a fortnight later, when a disorganized condition of intestine was discovered, such as no drug could ever have beneficially affected.

In reference to its action upon the pulse, respiration and temperature, but few observations were had. If anything, the pulse became fuller under its use. The respirations are generally increased, but this is undoubtedly due to the amount of abdominal disturbance present. In one case the temperature fell after evacuation of the bowels, but the records are meagre on this point.

RESUME OF SOME OBSERVATIONS ON ANTIPYRIN.

Kaufmann has been experimenting in the use of this drug, both as given through the stomach and when injected subcu-

taneously, his subjects being dogs and horses, and as this great febrifuge has been more or less used—and with varying success—by almost every veterinarian, I will give you the deductions made by this able observer:

He finds that by whatever avenue antipyrin enters the system it produces irritation of the gastro-intestinal mucous membrane. In large doses given by the mouth it often, though not invariably, causes nausea and vomiting. To a slight extent it lessens the force and number of the heart beats, and slows respiration. In still larger doses it produces symptoms allied to those of strychnia poisoning, but less marked. Paralysis, beginning in the posterior extremities, sets in, and the gastric juice and saliva are strongly impregnated with the drug. The action it has upon abnormally high fevers, however, is the most important. In healthy animals very little effect is produced on the internal temperature, but even here the effect is more marked than that of quinine and its salts. But he considers it a prompt and sure reducer of temperature where it runs high in pneumonia, pleurisy, typhoid fever, acute rheumatism, erysipelas, tuberculosis, giddiness and scarlatina.

He gives great preference to the hypodermic method of administration, as it has a better action, can be used in smaller doses, and less frequently. The best solution is 1 to 50 of warm water, and in this strength produces no local nor general bad effects. In high fever it must be administered in full doses every hour until the fever has abated. It is cheap and powerful, and Kaufmann thinks it should be substituted in every case for quinine. He also claims for it a marked hæmostatic and antiputrescent action. A medium-sized dose for the horse by hypodermic injection is 10 grammes (℥ vj.), and for the dog 1 gramme, to be continued hourly until the fever subsides. The dose by the mouth is the same, though oftener repeated.

SUBCUTANEOUS INJECTION OF MUSTARD AS A COUNTER-IRRITANT.

The employment of mustard as a subcutaneous injection was first brought to the notice of the Central Veterinary Medical Society of Paris by M. Durien, a veterinarian, May 13, 1886. The

details of the operation and indications for administration are as follows:

M. Durien prefers Savary's liquid essence of mustard, on account of its uniformity of strength and the facility with which it may be procured. He makes one or more injections, as the case requires, using alcohol or petroleum as a vehicle, to 1 to 2 grammes of the essence. He finds that œdema will be produced over a square decimeter, and claims for his method that results will be obtained in ten minutes, whereas with the ordinary sinapism it takes about two hours, and even then not always successfully; that as compared with the ordinary sinapism the engorgement is as intense, but less painful and more lasting. Out of twenty administrations the only complication was a small abscess at the point of injection, and that healed kindly. The operation may be performed in any region, but the best results follow where the skin is thin. The advantages claimed are:

(1.) That the essence being of uniform strength, the practitioner is certain of the result.

(2.) The results are immediate, a few minutes being sufficient.

(3.) Saving in time; six sinapisms can be carried in a very small volume.

(4.) Economy, the price of the essence being small.

(5.) No dressings are necessary.

M. Durien employs the essence of mustard in the following regions for the following diseases:

1st. In the neck, in cases of vertigo and ophthalmia. 2d. In the chest and sides, for heart and pulmonary troubles. 3d. In the abdomen, for typhoid fever, enteritis, colic, etc. 4th. In umbilical hernia, round the circumference of the tumor, the hernia being reduced in two cases about the tenth day.

M. Cagny uses it in the same way in doubtful cases of glanders, to assist diagnosis. In one doubtful case, with enlargement of the submaxillary gland, painful swelling of the hind limbs, but without nasal discharge or ulceration of membrane, he made two injections, one on each side of chest, and in forty-eight hours the ulcer and nasal discharge appeared.

AZOTURIA.

An Essay read before a meeting of the Veterinary Association of the State of Ohio, held at Cincinnati, July 26th, 1888.

By A. V. Derr, V.S.

Mr. President and Gentlemen: The subject that I have chosen to bring before this meeting is a disease that is of vast importance to the veterinary profession, as well as all of those that have an interest in the equine race. It is a disease that has given rise to quite a diversity of opinion as to its cause.

A number of writers have written and tried to point out the true pathology of this disease, but we are still in the dark as to the cause of it, and it has been called by different names. It has been termed, by some writers, albuminaria, and others hysteria, and some hemogloburia, and by the Germans "swaz herwindi," and to-day it is called azoturia. We were taught at the college that it was due to a hypernitrogenous condition of the blood in the system in general. And I understand that the Professor of the American Veterinary College taught his pupils that it was due to the liver failing to transform the albuminoids into urea. But I will have to differ in my opinion from the theories of both our worthy Professors. If the former means to say it is due to a hyponitrogenous condition of the blood in the system in general, I would agree to a certain extent; and as to the other, I cannot agree at all, for the liver has nothing to do with this disease, which I will try to prove to you before I close my paper on this subject. But my theory as to the pathology of this disease, or the elements that cause it, lead me to believe that it is due to an excess of carbonic dioxide, formed in the system from the waste products that are given off from the muscular system, and the nutritive material that is taken into the circulation to replace the waste which the muscular system undergoes while in action. And to fully understand this, we must become conversant with the mechanism of the equine system and the physiology of its action.

Let us take a physiological view of the equine, and what a

beautiful piece of mechanism do we see in the formation of the horse; and what a number of systems do we find in the construction of one great system, all working in perfect harmony with each other to maintain health. But if one of these becomes affected through negligence or ignorance of hygienic treatment, how soon we observe one or more of them affected through sympathy; and this is where so many of the writers observe symptoms that give rise to their theories as to the pathology of this disease.

As we stand and gaze at a horse in health, what do we behold? I know of nothing more befitting to call it than a chemical laboratory, with all the conveniences that are required to operate it; and to learn all the chemical changes that take place, I am afraid, will never be known to the profession. But let us take a physiological view, and note a few of the chemical changes that take place within this laboratory.

The most noted one is the reparative change, or in other words, the building up of the system; for we see if the horse did not receive food or water, it would be only a short period of time till he, as a then constituent entity, would disappear and the change would be marked and absolute; and this would appear more plainly while the horse is at labor. So that we learn that to maintain this body we have to give the horse food to replace the waste which the system undergoes in life. Let us now examine into this, "wasting."

To maintain life within this body there must be a certain temperature, termed animal heat, and we see this brought about by the burning up of its own tissues. This loss must be replaced by the food the horse partakes of. And here is a phenomenon that is very complicated and hard to understand. The combustion is produced by the oxygen and carbon coming in contact with each other.

Now let us look to the composition of the blood for a moment and note two of the elements it contains and their action.

One is hematine, and the other paroglobuline, which has the affinity of drawing oxygen from the inspired air and circulating it through the circulatory system to meet the carbon that is given

off from the muscular system. And we learn that the waste to the muscular system is not thrown off till the muscle is contracted; and right here is where we find the phenomenon of appropriation take place, and combustion is supported, and when the muscular system is in a state of quietude the waste products accumulate in the muscular system in an abundance; and also the blood becomes overloaded with nutritive material from the food which furnishes the life of the animal. Now as we look a little further, we see a set of vessels called lymphatic vessels, and they originate in the local parts of the body and extremities and terminate in the right and left subclavian vein. Another peculiarity of this system is that they pass from without inwards, and the movement of the fluid within this system is carried on partly by the endosmosis of the fluid into the interior of the vessels, and partly by the contraction of the muscles pressing upon their walls.

Here it is that we learn one of the phenomena: that exercise plays an important part in the pathology of this disease. We know that when the horse is first attacked with this disease, if stopped and the muscular system is brought into a state of quietude, the symptoms will pass off, and in the course of an hour or two the horse can be moved on without any serious results in most cases. Now, if it was due to the liver failing to transform the albuminoids into urea, we would, upon an analysis of the urine, find that the urine contained less urea than in health.

But on the contrary, we find an excess of urea, and all diseases of the liver manifest themselves by more or less premonitory symptoms. In azoturia we have no such premonitory symptoms that are visible, and in fact the horse seems, when taken out of the stable, in better health than usual; for the first thing we generally hear, when called to see a case of azoturia, is: "I never saw my horse in better spirits than when I first started out with him; I could scarcely hold it, for it seemed so spirited." In some cases, before the horse is driven a half mile it is attacked with the disease and falls, and seems a total wreck to the driver.

Then, can it be that the liver will take on such a change in so short a period of time, and be so functionless and deranged that

it will fail to transform the albuminoids into urea, and again in a few hours time, in some cases, if treated with hygienic and medicinal treatment, and in other cases with scarcely any treatment except hygienic, leave the horse convalescing and soon all right?

We see that by stopping a horse when we first notice the disease manifesting itself, would that have anything to do with abating this disease, if it were the liver failing to transform the albuminoids into urea, for the blood would still circulate through the portal system the same, and the cause would still remain until the fatal point was reached, or would be abated by medicinal treatment; and again, if it was the above stated cause, why would not all cases be attacked the same, instead of some in the anterior and some in the posterior, while others in the whole system?

We know the liver is one of the largest secretory glands in the body, and one of the most vital organs of the viscera; and when once so functionally deranged that it will not transform the albuminoids into urea, we would see more or less premonitory symptoms before the horse was started on its journey, and in place of the horse going out of the stable in fine spirits, it would be languid and inactive.

Let us notice a few of the symptoms of azoturia, to discover the manner and the reason for the manifestation of the disease. When carbonic dioxide is first formed it acts as a stimulant and seems "to brace the horse up," similar to a dose of alcohol; while when it is formed in excess till it produces its physiological action, it will cause clonic or tonic spasms of the muscles involved. Another symptom we notice is the extensive perspiration. When carbon and oxygen unite through a chemical union, there is a certain amount of heat formed which is eliminated from the system by the cuticles of the common integument, which acts as a diaphoretic, and causing excessive perspiration. Another channel in which this carbonic acid gas is given off is the respiratory system, for the breathing will be accelerated, which is caused by the carbonic acid gas stimulating the pneumogastric nerve; and that nerve being given off from the medula oblongata, the im-

pulse is sent to that point and then reflected down the spinal cord to where the phrenic nerve is given off, and that nerve being the nerve supply to the diaphragm, it stimulates that nerve and through it the diaphragm, thus causing it to act faster and thereby producing accelerated breathing.

Another peculiarity of azoturia is that we always observe the largest muscles involved—those muscles that have the action for propelling the body, such as the psoas and gluteal and vastus, as well as those of the fore extremities.

We know that a large muscle will give off more waste than a smaller one, and it will take more nutritive material to replace the waste of that muscle; and this fact tends to lead me to believe that the elements that combine to produce the disease are produced in the muscle itself, being the product that is given off from them and the nutritive material that is carried there by the arterial system to rebuild them. On that theory we can account for this disease attacking the largest muscles in different parts of the system and the principal muscles of locomotion, and the faster and more exercised these muscles, the faster will the compound be produced. Here, again, we can account for the phenomenon that the faster the horse is exerted, the more serious will be the case. We also observe, in the treatment of azoturia, that if we can be successful in keeping the patient quiet and from struggling, we can soon bring the disease under our control and have our patient on the road to convalescence. And one more marked symptom we observe is the dark-colored urine, which I think is due to some chemical reaction from the transformation of the urea into an ammonia compound.

My conclusion, therefore, is that azoturia is produced, not by the above theories which I have mentioned in this paper, but is due, as I have said, to an excess of carbonic dioxide, formed in the system from the waste products that are given off from the muscular system and the nutritive material that is taken into the circulation to replace the waste which the muscular system undergoes while in action.

SHEEP DISEASES: THEIR CAUSES, NATURE AND PREVENTION.*

By Thomas Walley, M.R.C.V.S.

(*Continued from page* 215.)

The Kidneys.—These organs, though small as compared with the liver—and especially, I think, small in the sheep as compared with those of other animals—are, nevertheless, of vast importance in relation to health. Unlike the liver, pancreas, &c., *they are not producing organs, i. e.*, nothing that is formed in them is ever sent back and used up in the system, with the exception of water, which, in the case of deficiency of that fluid in the body, and in dry weather, is supposed to be reabsorbed from the kidneys. They are essentially excretory organs, serving to get rid of excess of water, of salts and of waste matter; as also of the poisonous products of cells (leucomaines) which, if left in the blood, would act as poisons. Any interference with or arrest of their function is followed by grave consequences, and no disease is more dreaded by the physician than kidney disease because he knows full well that it means in the long run death by the action of such deleterious matters as the products of oxidation which are allowed to accumulate in the system. Arrest of the function of the kidneys is to some extent compensated for by increased activity of the skin and the bowels; hence, if by any means the functions of these organs is interfered with the disease of the kidneys is rendered more grave.

To illustrate the rapidity with which certain matters are passed out of the system I may direct attention to the fact, that if one puts his feet into a solution of potash or soda those salts can be detected in a short time in the urine; or if turpentine be rubbed into the skin, even the skin of the hands, it is detected in the urine in a very short time by the odor of the "sweet scented violet" which it imparts to that fluid.

One important thing I would particularly direct attention to here, and that is, that whenever the albumen in the blood becomes

*Transactions of the Highland and Agricultural Society of Scotland.

so degraded, as it too often does, as to be unfit for use, it is passed out by the urine, in which it can be detected by glazing or varnishing the skin of the hand when it is allowed to flow over it, or by subjecting it to heat, when it coagulates. Not only the albumen but the coloring matter of the blood, when it is dissolved out of the cells, is passed off in the water; and this is the explanation of the color of the urine in the disease known as "red water" in cattle, a condition not usually seen in the sheep because in this animal the colored water of the blood is, curiously enough, thrown into the cavity of the abdomen, causing "bloody dropsy of the belly" (sanguineous ascites).

Under certain circumstances, the kidneys excrete enormous quantities of clear water, constituting *diabetes;* but this is not noticed so much—except by observant shepherds—in the sheep as in the horse. In the latter animal it is frequently caused by mouldy bad foods, by mow-burnt hay and grass, or hay grown with excessive quantities of nitrate of soda. Diabetes, if unchecked, kills by exhaustion.*

The spleen (melt) and the lymphatic glands (kernels) are also of great importance to animals, for by them the white cells of the blood are manufactured, and in certain diseases the quantity of white cells becomes so excessive as to far outnumber the red cells constituting "white cell blood" (leucocytosis) and producing emaciation and death. The spleen is influenced injuriously by fever poisons and by the organisms of "anthrax," in which disease it is often the first organ to become affected. The spleen probably serves other purposes than that of manufacturing white cells; as iron, soda, and phosphates, with various extractive matters, are found in tolerable quantity in its ash when it is burned.

The lungs are of the greatest possible importance to life, and any interference with their function exercises an injurious influence upon the whole of the system and more particularly on the blood and the brain, as it is through their agency that carbonic acid is got rid of from the blood and oxygen supplied to it; or, in other

* During the last winter the author has frequently detected degeneration of the kidneys in the carcasses of sheep which had suffered from *water braxy*. He pointed out this condition in similar cases many years ago.

words, *it is in the lungs that the change from venous to arterial blood takes place.* Watery vapor too is exhaled by the lungs, and probably, to some extent, volatile matters also. Interference with the excretion of carbonic acid by the lungs tends to produce plasticity of the blood and favors congestive processes.

The skin, though last to be considered, is not the least in importance, particularly to the sheep.

From this structure, under ordinary circumstances, watery vapor is constantly being exhaled, constituting *insensible perspiration;* and in the event of any derangement of the kidneys it takes on, if allowed to do so, compensatory action and assists in getting rid of the excess of water from the blood. Not only does it give off water, but it also, under certain conditions, absorbs water; that it possesses this function is shown by the fact that if an animal is placed in a bath and retained there for a time, it gains in weight.

Warmth favors the evaporation of moisture, cold retards or arrests it; and this is a matter of great importance to the sheep because when its fleece, as so often happens, is saturated with water and the weather is cold the skin cannot perspire; on the contrary, water is absorbed and this is often aggravated by the watery nature of the food, and by inactivity, from disease, of the kidneys, and dropsy results.

The facts just noted account for a further fact, viz., that while the sheep can withstand the effects of almost any degree of cold it is almost injuriously affected by *cold and wet combined;* and this is especially true of lambs.

The perspiratory function of the skin is not the only function of importance that it performs. It is a *breathing or respiratory* organ also, though its powers in this direction are limited; nevertheless, if the skin is covered with some impermeable material, such as varnish, or, as is frequently done in the case of affiliation of lambs, with a lamb skin, the animal dies. It was at one time thought that death in these cases was due to suffocation; now, however, it is believed to be due to poisoning. As the temperature lowers materially, such a proceeding would certainly arrest the excretory function of the skin most effectually.

That oxygen is taken in and carbonic acid given off by the skin has been shown by direct experiment.

The *excretory function of the skin* is of the highest importance. The sweat usually contains common salt, ammonia and fatty acids in varying though small proportions; but it is further known that under some conditions other materials are excreted, such as waste products and even coloring matter, and in some instances certain constituents of the blood also. In disease of the kidneys matters usually passed off by these organs have been found in the sweat.

In all animals a certain quantity of fatty (sebaceous) matter, known as *yolk* in the sheep, is secreted by the skin, but in no animal is the amount so great as in the sheep, and it is early noticed that in an unhealthy animal the fleece becomes dry and harsh instead of greasy.

Arrest of this secretion is of most importance in the case of animals exposed to cold and wet, for it leaves the skin at the mercy of these influences and allows of the ready absorption of the latter. Yolk contains a large percentage of potash, which is obtained from the soil and removed in the wool.

Having considered the influence of the action of the different organs of the body in the production of disease, or rather I should say in the preservation of health, I will next look at the influence of foods and for brevity's sake will group these foods—1st, into those of a succulent character, *i.e.*, containing large proportions of water; 2nd, into those rich in heat-producing material; and 3rd, into those rich in flesh-forming substances.

(1) *Succulent Foods.*—It follows, as certain as light follows darkness, that in proportion as watery elements increase nutritive elements decrease, and in no class of food is this so strikingly shown as in turnips, which contain about ninety parts of water to ten of nutritive matter. The same applies to grass which has been rushed by excess of moisture, artificial stimuli and warmth.

Now, if these foods are not supplemented by others of a nutritive character disastrous results must and do follow; the class of diseases produced being those in which lowered vitality and debility with dropsies—such as water braxy, shell sickness, vanquish or trembles—are marked. The lowering influences of such foods

are aggravated by low temperature and exposure to cold winds, particularly east or north-east winds, but of the latter more anon. Excessive quantities of turnips are most injurious when artificial manures, especially salines, have been too generously used and there has been long-continued wet weather. Moisture within, moisture without, moisture above, below and around, will tell its tale; will dilute and impoverish the blood and macerate and soften the tissues; will disintegrate the cell elements and render them incapable of performing the functions of organic life; moreover, it will affect the blood cells and the walls of the blood-vessels injuriously.

While swedes are more nutritious than white turnips, they too may be overdone; and owing to the quantity of sugar they contain they produce fatty changes in the liver and as a result thereof deficiency in blood supply, especially of red blood, with a tendency to throwing out of fluids of an albuminous character into the tissues, constituting "turnip braxy."

I have seen sheep (especially lambing ewes) that have been fed *ad libitum* on swedes, without any complementary food, die in dozens, their carcasses laden with fat but not a teacupful of blood in the veins of any one of them; and in the case of breeding ewes, I have seen the recently born lambs the subjects of internal dropsies. I have again seen ewes fed in the same way, on swedes which have been forced with artificial manure, especially phosphatic manure, die in dozens from *milk fever* (so called in some districts) while their lambs have succumbed to *joint-ill;* and some years ago, Mr. Robertson, late of Kelso (the late Professor Robertson), assured me that he had, by way of experiment, produced these diseases at will.

Foods rich in carbohydrates and fatty matters are, in excess, extremely injurious, bringing about, as they do, the changes already noticed in the liver; and if sugar is superabundant, diarrhœa or scour. Moreover the blood becomes over-laden with their products and highly plastic from imperfect oxidation, and congestion is the result.

Foods rich in flesh-forming material (*proteids*) are, in too great quantity, also highly injurious, tending, as they do, to an

undue accumulation of albumen and fibrinous elements in the blood, thus taxing the cells to their utmost to appropriate the nutritive matter offered to them and so overpowering them, as it were, as to prevent their normal function: in this way imperfectly formed tissue is produced and the result is the advent of congestive and inflammatory conditions (so-called *inflammation*) and also extravasations of blood into the tissues, producing one form of so-called *red braxy*.

Milk may be briefly alluded to here seeing that it contains a relatively large amount of proteid matter as well as fat. It is a well-known fact that milk contains all the elements necessary to the nourishment of the animal body and it is, practically, the only food of which this can be said. If, however, milk is deficient in nutrient materials and in salts, owing to some inherent defect in the blood of the animal that produces it, we cannot expect that the consumers of it can either retain their health or grow; and, as a matter of fact, nearly every disease from which young animals, whether lambs or otherwise, suffer, is due to impoverished or to excessively rich milk. Moreover, milk is most certainly a conveyancer of disease-producing germs and other injurious matters from the mother to the offspring, as is seen in anthrax (though this is denied by some) and in the case of vegetable and animal poisons. In the artificial rearing of young animals, skim milk, mixed with lime water, may be substituted for sweet if the latter is found to be too strong.

Innutritious food is injurious in a twofold sense—1st, animals require to take in an excessive quantity in order to obtain a sufficient amount of nutritive matter and thus the digestive organs become overtaxed and weakened, and indigestion results; 2nd, the tissues of the body do not gain sufficient nutrition, and weakness and debility follow, a matter of the last importance in pregnant ewes, as they cannot, under such circumstances, provide sufficient nourishment for two lives, or it may be for three or four.

Dirty foods, i.e., dirty turnips and fouled or sanded grass, are injurious, as the dirt and sand collects in the pouches of the stomachs and in the blind gut (cæcum), mechanically interferes with their action, and produces irritation and inflammation, and even ulceration.

the Western States and Territories, he invariably carried with him, with a blind and unquestioning faith, a hypodermic syringe and some permanganate of potassa, prepared in case of serpent bite to promptly administer according to de Lacerda's directions, but his confidence was weakened to a certain extent by the results of the experiments of Vincent Richards, Fayrer and others, and, to verify if possible the different statements, he determined to experiment himself with the permanganate, and as will be seen from the recorded notes below, was forced to the conclusion that this salt was of little or no value, at least in poisoning from *Crotalus* venom, if de Lacerda's suggestions only are followed. It was not intended at first to take up the subject of other so-called antidotes, but a good supply of serpents having been obtained by the National Museum, by whose co-operation the experiments were performed, it was thought advisable to continue the investigation still further. In addition to this reason, quite a number of persons, hearing of the experiments, have from time to time sent various reputed antidotes or have suggested certain methods of cure.

The venom used was obtained from several healthy specimens of the northern rattlesnake (*Crotalus horridus*) in the manner recommended by Weir Mitchell. The snake is seized a short distance behind the head by means of a staff, having at its end a thong of leather passing over the end and through a staple, and this is tightened or loosened, as occasion may require, by means of a string extending up the handle. It has been found necessary not to confine the snake's head too tightly, as otherwise it cannot be induced to strike. The head being secured, a stick having its end covered with absorbent cotton is pressed against the snake's mouth, and it is teased until sufficiently irritated to strike its fangs into the cotton, which receives the venom and obviates any danger to the fangs, as it has been found in allowing snakes to strike against a saucer the fangs are frequently broken off. Generally a snake will strike three or four times very viciously, and then relapse into sullen apathy. We have in vain endeavored to procure venom from our snakes by pressing over the poison glands, but this has been unsuccessful except in one instance unless

Frosted food should always be avoided if possible and sheep should not be put on frosted turnips until the day is well advanced; it is particularly harmful in pregnant ewes.

Decomposing and decaying foods are the most injurious of all; and it passes my comprehension how an enlightened man can in the early spring, when his crop of swedes has exceeded the wants of his flocks and herds, take the half or wholly rotten roots and scatter them thickly on the pastures for his sheep to eat. They may manage to pick out "tit bits" here and there, but in doing so they swallow also a large proportion of decomposing matter, than which nothing is more likely to set up septic inflammation of the true stomach and bowels, and produce diarrhœa and even *blood poisoning.*

Mouldy foods may be placed in the same category with the foregoing, and by the light of our greater knowledge of the action of fungi in the system we are warranted in attributing many of the diseases marked by a depraved condition of the blood to their influence.

Most certainly many moulds are active agents in the production of inflammation of the mucous membrane of the bowels, and they probably also in some instances cause abortion.

With impure foods we may class *impure water*—a prolific source of morbid conditions marked by depravity of the blood, and by diarrhœa and dysentery.

(*To be continued.*)

SNAKE BITE AND ITS ANTIDOTE.—II.

EXPERIMENTS WITH CROTALUS VENOM AND REPUTED ANTIDOTES, WITH NOTES ON THE SALIVA OF HELODERMA ("GILA MONSTER.")

By H. C. Yarrow, M.D., Curator Dept. Reptiles, U. S. National Museum.

(*From Forest and Stream*).

(*Continued from page* 223.)

After reading de Lacerda's views regarding the antidotal effect of the permanganate of potassa in cases of serpent bite, the writer was so firmly convinced of its merits that, during his travels in

the snake was chloroformed, and if this is done the reptile generally succumbs within a few days. This fact is mentioned as it has been learned through the public prints that some experimenters in a neighboring city have succeeded in squeezing out the venom while the snake was active.

The quantity of venom obtained from different individuals varies greatly. From a large rattler weighing perhaps three or four pounds, our first attempt resulted in securing about fifteen drops of venom after the reptile had struck three times; but if the process is repeated every day or two but a very small quantity is obtained. The smaller snakes give a much smaller quantity. The cotton after having received its charge of venom was removed from the stick and washed out carefully in glycerine, and by measuring the quantity of this substance first, and then after the venom had been added, we were able to tell accurately the strength of the solution, which consisted of eight drams of chemically pure glycerine and one dram of the venom. This is the preparation which was used in all the experiments, and is called glycerine-venom. One fact should be stated as bearing upon the popular belief that snakes, if kept from water, are not poisonous. It was found that by keeping the rattlers without water for a week or two the quantity of venom was materially smaller than when we allowed them free access to water, and that the color of the venom, which was yellowish-green when no fluid was supplied, became much lighter in color when they had freely drunken. We have never been able to induce our rattlesnakes to eat, although they have been tempted with a variety of food, but water they consume largely.

When the present supply of rattlers was first received, it was a very easy matter to grasp any one of them behind the neck with the snake staff; but experience has taught them that they must do something against their will, and now it is quite difficult to secure them, and even when secured it is difficult to make them strike; in fact, one specimen is now so tame that it may be handled with impunity, and it is the writer's belief that a rattler, if carefully and tenderly handled, will not bite the hand that grasps it. It is believed the Moqui Indians are aware of this, and it enables

them to handle with impunity the venomous snakes used in their fearful dance, so well described by Capt. John G. Bourke, U. S. A. Many persons suppose that the fangs of a rattler once removed, the reptile is harmless for all time, or that at least a year is required to replace the fangs. This is an error, for the writer has in his possession a rattler in which the fangs were twice replaced after an interval of three weeks only. As the rattler doubtless knows when the contents of the poison gland is exhausted, as is evidenced by his refusal to bite after two or three efforts, he probably also knows that it is useless to show fight when the fangs have been removed, and this has been practically tried on one of our snakes. She continued to coil and rattle, but no matter how much teased and irritated, makes no attempt to bite.

An interesting fact has been noticed during the course of our experiments, and one which it seems important to record. It is, that the rattler does not invariably use both fangs in striking, the muscular movements of either side of the jaw being quite independent of the other, and quite at the will of the reptile. The practical bearing of this point is that, occasionally in snake bite, but one puncture will be found, and some doubt might exist if this was really due to the serpent's fangs or not. Another point of interest lies in the fact that if only one fang is plunged into the tissues, the patient will not have received so large a dose of venom as if both teeth had been used, and a more favorable prognosis can be made.

Experiments with Permanganate of Potassa.

This was the first substance used in the experiments, and de Lacerda's directions were carefully followed with the exception that chemically pure glycerine was used as a menstruum to preserve the venom, instead of distilled water. The writer is aware that de Lacerda claims that if glycerine is used to hold the venom in solution, the permanganate is rendered inert, but this is not the case, as in our experiments it has been found that a five per cent, solution of the salt if added to the glycerine and venom solution neutralizes it poisonous effects; moreover, if a ligature is placed around the leg of an animal and a certain quantity of glycerine-venom is injected below the ligature, followed by a solu-

tion of the permanganate, no poisonous effect is produced by the venom. This effectually disproves de Lacerda's statement. It should be mentioned that in all the experiments tried with the various reputed antidotes, different quantities of these were always first injected into the animals on the day preceding the test with the poison, in order to ascertain if the remedy itself was capable of producing mischief or death.

In order to ascertain the amount of glycerine-venom required to destroy a pigeon, the following experiment was made Oct. 21, 1887.

Oct. 21, 1887—11:45 A.M.—Injected pigeon in the lower part of left breast with 3 minims of glycerine-venom solution.

11:48 A.M.—Pigeon commenced to tremble and had difficulty in opening the eyelids.

11:55 A.M.—All voluntary motion ceased.

12 M.—A good deal of tumefaction was noticed around the part injected.

12:05 P.M.—The pigeon has recovered partial muscular movement and the eyes appear brighter.

12:15 P.M.—The pigeon has again lost muscular power.

12:35 P.M.—The pigeon gave two slight flutters, a few gasps and was dead. A post mortem was made before rigor mortis set in, and it was found that the whole of the left breast was ecchymosed and congested with dark blood, and the heart was filled with venous blood.

It was thus discovered that 3 minims of the venom solution was sufficient to destroy a large healthy blue rock pigeon in less than one hour, the strength of the solution being eight drams of glycerine to one dram of the crotalus poison.

Oct. 22—11:43 A.M.—Injected pigeon with 5 minims of venom solution in left breast.

11:45 A.M.—Injected 17 minims of 1 per cent. solution of potassa permanganate in left breast.

11:54 A.M.—Convulsive movements of the pigeon's head was noticed.

11:55 A.M.—Injected 17 minims more of the permanganate solution, as the bird was getting very feeble. Opisthotonotic spasms took place.

12:15 P.M.—The pigeon died without a struggle.

In this experiment the permanganate solution was injected twice in the immediate vicinity of the venom injection. It should not be forgotten that the 1 per cent. solution of the permanganate is the one recommended by de Lacerda.

Oct. 25—12:45 P.M.—Injected a large healthy English rabbit in the left thigh with 5 minims of the venom solution, followed at once, without removing the hypodermic needle, with an injection of 25 minims of the 1 per cent. permanganate solution.

12:50 P.M.—Rabbit began to show the effects of the venom; respiration very much quickened; heart beats fast and is weak; animal indisposed to movement.

1 P.M.—Rabbit drank a little water, but was breathing short and fast.

1:10 P.M.—Part injected quite swollen and ecchymosed, but otherwise the animal seemed to be better.

1:40 P.M.—Rabbit was eating, and appear to be doing very well.

3 P.M.—Rabbit seems perfectly well with the exception of a stiffness of the leg injected.

Oct. 26—12 M.—Rabbit appears perfectly well with the exception of a slight lameness and some swelling of the injected leg.

Oct. 27—Rabbit found dead in the cage. Post mortem: Heart contracted, lungs, liver and kidneys congested, bladder full of urine, intestines full of fæces. In the vicinity of the point of injection was found a large abscess, and the surrounding tissue and the whole limb was ecchymosed, and had sloughed deeply. The liver, lungs and mesentery were studded with parasitic cyst worms still living. Decomposition was well advanced in the affected leg.

In the next experiment it was decided to use a smaller dose of the glycerine-venom, the subject being a large healthy English rabbit.

Oct. 27—11:45 A.M.—Injected rabbit in left thigh with 3 minims of venom solution, to which was added 10 minims of water without withdrawing the hypodermic needle; this was followed at once with an injection of 25 minims of 1 per cent. permanganate solution.

11:50 A.M.—Respiration and heart's action much increased, with a curious backward movement of the animal.

11:55 A.M.—Complete loss of motion in leg, with considerable tumefaction of part injected. Animal averse to motion even when irritated.

12:30 P.M.—Animal moves more freely, and seems better, although there is much more swelling and discoloration in the vicinity of the point of injection.

3 P.M.—Animal appears to be doing very well.

Oct. 28—12 M.—Great tumefaction of leg and thigh, œdema of rectum. Punctured and let out large amount of bloody serum. Animal has eaten, but is averse to movement.

3 P.M.—Animal very sick, unable to stand; all motion of hind legs lost; is very weak.

Oct. 29—10 A.M.—Rabbit was found dead in its box, excessive hemorrhage having taken place from the wound. Post mortem: great infiltration of blood in the leg and surrounding tissue. Much decomposition and sloughing.

It was now determined to try the effect of placing a ligature around the leg of a fowl before injecting the venom, with the following result:

Nov. 2—Hen injected in left thigh with three minims of venom solution with 10 minims of water added.

12:40 P.M.—After a ligature had been placed two inches above the place of injection, without withdrawing the needle, 25 minims of 1 per cent. permanganate solution was injected.

12:50 P.M.—The ligature was removed.

1:15 P.M.—No effect.

1:25 P.M.—Hen draws up the leg injected and stands on the other.

Nov. 3—Fowl apparently in fair condition, but there is much greenish discoloration of the leg and softening of the tissues contiguous to the joint where the venom was injected, abscess forming. Is quiet and stands upon both legs, but does not use the left leg.

Nov. 4—Fowl in about the same condition as yesterday; greenish discoloration more marked, but not extending so far into the surrounding tissue. Part quite soft and feverish.

Nov. 5—Fowl suffering no inconvenience from the injection; discoloration of the part subsiding; very little swelling.

Nov. 6—No result.

Nov. 7—Discoloration and swelling of part injected have entirely disappeared and the fowl has entirely recovered from the effects of the venom.

It will be seen from this experiment that the permanganate had a decided antagonistic effect to the venom, doubtless because the ligature confined the latter to a limited area, and prevented it being carried into the general circulation. In the next experiment the venom solution and permanganate were mixed together and used with the result as noted below.

Nov. 3—12:10 P.M.—Injected into the right leg of a fowl 3 minims of glycerine-venom, 5 minims of water and 30 minims of 1 per cent. solution of permanganate, mixed in vessel and allowed to remain together two minutes. Solution of permanganate changed at once to a color resembling solution of dragon's blood.

Nov. 4—Fowl appears to suffer no inconvenience from the effects of yesterday's injection. Slight swelling and discoloration, and only a slight increase of temperature.

Nov. 5—Fowl as well as ever.

Nov. 7—Discoloration of and swelling of the part injected has disappeared, and the fowl is in a perfectly healthy condition.

With a view to still further determining the beneficial effect of the ligature, the following experiment was tried with a large dose of the venom and of the permanganate:

Nov. 10—12:45 P.M.—Injected 10 minims of venom solution into right leg of hen below ligature, followed at once by 25 minims of 2 per cent. solution of potassa permanganate. Ligature allowed to remain on three minutes. The tissues near puncture were well kneaded. (This chicken was injected before with 3 minims of venom and 1 per cent. solution permanganate.)

2:30 P.M.—Fowl inclined to stand still, otherwise no other symptoms noticed.

Nov. 11—11 A.M.—Fowl not inclined to move around, but sits down; not much swelling or inflammation of the part injected, but a little darkened in color; eats well.

2:30 P.M.—Fowl appears to be much better than she was this morning; eats and drinks as usual.

Nov. 12—11 A.M.—Fowl slightly lame in the leg injected; part swollen, with greenish discoloration; eats and drinks well.

2:30 P.M.—Fowl in same condition.

Nov. 13—No result.

Nov. 14—Fowl entirely recovered.

It was thought advisable to try the antidotal effect of a much stronger solution of the permanganate, giving a small dose of venom, the result being as follows:

Nov. 21—12:18 P.M.—Injected 3 minims of venom solution into left leg of hen, followed at once by 25 minims of 5 per cent. permanganate solution through the same puncture without removing the canula.

12:22 P.M.—Leg drawn up and trembling; respiration quickened, and chicken lying down—can hardly be made to stand up and oscillates backward and forward, feathers ruffled.

3 P.M.—Chicken will not stand, loss of motion of leg injected.

Nov. 22—11 A.M.—Chicken somewhat better, can use leg injected a little, but still inclined to lie down. Much swelling and greenish discoloration of the leg.

Nov. 23—Hen in about the same condition as yesterday. Will not stand up.

Nov. 25—10 A.M.—Hen found dead; much swelling and sloughing of the leg injected.

This same experiment was repeated upon other fowls and upon rabbits, the result being death.

It should be remembered in this connection that de Lacerda claims that in nearly every case in which he used a 1 per cent. solution of the permanganate the animal recovered, and moreover he claims that the antidotal effect is produced even if a considerable period of time has elapsed after the injection of the venom. In our experiments we have shown that even a 5 per cent. solution is of no value, and the reputed antidote was used immediately after the injection, in fact so soon as the venom was injected the barrel of the hypodermic syringe was immediately unscrewed from the needle which was allowed to remain imbedded

in the tissues, the syringe was rapidly filled with the permanganate and the injection was then made. Sometimes less than half a minute was consumed in the whole operation.

(*To be continued.*)

REPORTS OF CASES.

TEMPORARY DEAFNESS AS A SEQUEL TO PHARYNGO-LARYNGITIS.

By Roscoe R. Bell, D.V.S., Brooklyn.

On July 1st I was called to see a horse in a boarding stable where I was at the time treating a number of horses affected with influenza of a mild type, the chief complication being laryngitis.

I found that my new patient was a bay mare, used for road purposes, six years old, of rather delicate build, and valued very highly by her owner on account of special qualities and the fact that he had raised her.

This was at about 9 o'clock on Sunday morning. She was very feverish (temperature 105°), very much dejected, eyes entirely closed, emitting a watery discharge; conjunctiva excessively congested; respiration hurried; pulse fast and very weak. She had a paroxysmal cough, and was very tender upon pressure in the region of the larynx. I prescribed stimulants, and had her throat rubbed with a strong liniment. In the evening her internal temperature had gone up to 107°; prostration more marked—staggering all over her stall. I now administered quinine in two drachm doses for three doses, and by morning her temperature had fallen to 104°, and she continued to improve under the stimulants until at the end of the week she began outdoor walking exercise, though she coughed considerably under the exercise. I prescribed a familiar electuary, and her cough gradually disappeared, her owner increasing her exercise until it consisted of a smart jog around the park.

In a week from this time her owner again called me in, stating that he believed his mare was deaf; that she took no heed to his chirping (which formerly had been all that was necessary to

cause her to spring right into her gait), yet when he simply tapped her with the lines she manifested the most willing inclination to trot as fast as she ever did in her life.

I examined her and found that there was no doubt that she could not hear a sound, though everything about her external head was perfectly normal; no tenderness in the region of the ears or throat, but she had a discharge from the nostrils when her head was held in a dependent position—thus showing that there was a collection of pus in the gutteral pouches. Her owner was especially anxious to hear my prognosis, and I gave him a favorable one, upon the following grounds: The mare had been suffering from pharyngitis; the intermittent discharge from the nostrils told me that the inflammation had extended up the Eustachian tubes as far as the gutturals, and if it had gone that far why could it not extend on up into the middle ear, and by pressure of the inflammatory exudation upon the terminal branches of the eighth pair of cranial nerves, cause an interference with their function? And as the inflammation should subside, as was most likely (the mare being otherwise in perfect health), I argued that when the exudation became absorbed there would be a return of function. My prognosis has been verified, the animal hearing every word spoken to her by her owner when driving her.

I have never had experience with a case of this nature before, and our text books are as mute as a clam upon the subject; and since it would be extremely difficult to treat affections of an organ situated in the centre of the petrous temporal bone, I think that a proper prognosis is of great importance.

HYSTEROCELE.

By F. D. Hinebauch, V.S., Kalamazoo, Mich.

Since commencing practice, in the spring of '87, I have met with two cases of Hysterocele in the mare. The first case occurred July 18, '87, in a Clydesdale mare, the property of L. G. Bragg. The mare was first noticed ailing on the 17th. The following day the abdomen reached below the hocks. The mare was due to fold, and we determined to remove the colt. Upon examination,

we found a rigid os, which it was impossible to dilate sufficiently for the delivery of the fœtus. As the symptoms were not very urgent, we decided to bandage the mare to prevent any further displacement and await results. The next day we made another visit, when we found the os dilated, with occasionally light labor pains, and we soon delivered the mare of a living foal, which lived for three days, and, had it not been chilled, the prospects would have been good for raising it. The mare recovered and is now at work, although unsightly owing to the pendant abdomen.

The second case was a Standard bred trotting mare, four years old, the property of S. A. Brown & Co., and was first noticed ailing July 12, '88, when there appeared to be a tumor forming in the mamary gland. It gradually extended until it reached the sternum, but did not become near so pendant as in the former case. There was a rupture of the skin about an inch long between the teats. On the 13th we were called to see the mare and found her in the above condition. We also found the condition of the os similar to that in the first case and proceeded in the same manner, and on the next day delivered the mare of a living foal, which lived for about twenty-four hours.

The mare is doing well, the hernia diminishing in size, the abdomen gradually assuming its normal position.

In the last case the head was doubled over on the left shoulder and the fœtus lay on its back. The fore legs were also bent backward and were lodged below the pelvis, making it somewhat difficult to bring into proper position.

PILOCARPINE AND PHYSOSTIGMINE.

By the Same.

At present the subject of Pilocarpine and Physostigmine is receiving a great deal of attention from some noted English veterinarians. I have used the drugs for over a year, and my observations lead to somewhat different conclusions from those arrived at by them—especially as to its sudorific action. I have noticed the most profuse perspiration within fifteen minutes after its administration. This is especially true in severe cases of acute

indigestion. Not all cases on which I have used the combined drugs are susceptible to its sudorific action; the older and more debilitated or the younger, the more noticeible, while in good, strong, middle-aged animals I have rarely witnessed it.

While I do not believe the combined drugs are a cure-all, yet I think they can be advantagously used. In all cases of immobility and the various forms of colic, where there are malpositions of the alimentary canal, in such cases they may do harm. I have used the combined drugs with good success in azoturia, and also parturient apoplexy in the cow.

EVERSION OF THE BLADDER.

By Thomas W. Scott, V.S., Memphis, Tenn.

Mr. Editor:

Though a stranger to you, I ask space in your journal with a view to contributing to veterinary science. The subject of this communication is eversion of the bladder in a mare, which is, so far as I can ascertain, seldom if ever met with by veterinary practitioneers.

The case in point was an imported Norman mare, belonging to Mr. F. A. Decker, of the Groveland Stock Farm, Iowa, where I was at that time pursuing the duties of my vocation as a veterinarian. It was discovered soon after parturition, which had been performed with considerable difficulty. I account for it in the following manner, but am not sure as to the correctness of my view:

The fœtus must have had one of its fore feet down in front of the pubis in the pelvic cavity and pressing in the region over the fundus of the bladder, and when the uterine contractions came on must have turned the body of the bladder back into the urethral canal and, as the mare strained, it was everted.

After foaling the urine was seen to dribble constantly and the mare still continued to strain, and after the placenta was expelled the owner discovered the reddened mass protruding between the lips of the vulva, and, supposing it to be the uterus, at once telegraphed me to come and replace it, to which I at once

responded, but it being a considerable distance from town, I was necessarily some time in arriving. I made a thorough examination of the parts, and though I had never seen or read of a case of eversion of the bladder, yet I soon learned that it was such a case I was dealing with, and no mistake. I at once set about to devise means for reducing it with as little irritation to the mucous membrane of the bladder as possible. I had a mare's steel catheter, to which I attached the rubber bulb from a human syringe and tied it tightly on, so that it was nice and soft and pliable. I introduced my right hand into the vagina and held the bladder down on the floor, so that when I pressed with the instrument on the fundus of the bladder it would not turn back further into the vaginal canal but would fold down into the urethal canal, which it did, with firm but steady pressure, until it was completely reduced. I held it there for ten minutes, during which time she made several attempts to force it out again. I had her blanketed warmly, and had cloths wrung out of hot water placed over the loins, and removed my hand and instrument and she stood quietly, except that she voided urine very often, which, on account of the irritation of the bladder, she could not retain long at first. I gave one injection of tepid water and belladonna and continued the other treatment, fed a loose, sparing diet for a few days, and she made a speedy and complete recovery.

EXTRACTS FROM GERMAN PAPERS.

EMPLOYMENT OF THE STOMACH PUMP IN THE TREATMENT OF DOGS.

By F. W. Turner, Ph.G. (Student A. V. C.)

For a number of years the stomach pump has been used in human practice of medicine, both for therapeutic and diagnostic purposes, but in veterinary practice this instrument has been almost entirely ignored. In the Berlin hospital for the smaller domestic animals the writer often had occasion to observe in dogs loss of appetite and derangement of the digestive functions. The animals manifested the following symptoms: great fastidi-

ousness in the choice of aliments or total loss of appetite, frequent efforts at vomiting, which would end in a cough and the expectoration of a small quantity of tough and glairy mucous. This cough would often be the most prominent symptom besides the loss of appetite, and would almost create the belief that the animal was suffering from some pulmonary difficulty. Besides the above named symptoms, there were no indications of any acute intestinal troubles. Believing the cause to be a fermentation of indigested substances in the stomach, which brought about acidity of that organ and efforts at vomiting, the following treatment was indicated, viz.: removal of the abnormal fermenting substances and products.

In human practice the physician is enabled by means of the stomach pump to empty the stomach and wash it with some anti-zymotic solution. A stomach pump for use on dogs may be improvised out of a male horse catheter, which is introduced into the stomach through a perforated gag made out of a piece of board. To the exposed end of the catheter is attached, by means of a small piece of rubber tubing, a small funnel, and the apparatus is ready for use. In order to obtain a correct idea of the character of the materials contained in the stomach, the first and second rinsings should be made with clear water, the third and last rinsing should be done with a lukewarm solution of salycilic acid, 1 to 300.

The filling and emptying of the stomach is accomplished in the following manner: Into the funnel, held above the dog, is poured a quantity of water, proportioned to the size of the stomach, and at the same time the region of the stomach is very carefully kneaded in order to mix the contents thereof with the introduced liquid, then by lowering the funnel below the level of the stomach we obtain a syphon, by which means the stomach may be readily emptied. About the calibre of the catheter it may be said that a regular male horse catheter will also do for small dogs, it is even a necessity that this size should be used, in order to prevent stoppage by foreign substances. If the liquid should cease to flow it is only necessary to move the catheter up and down a few times and the fluid will resume its course. If too great a quantity of

the liquid has been introduced into the stomach, or if the full stomach is kneaded too vigorously, vomiting readily occurs. In this case the catheter must be removed at once, as otherwise aspiration of the vomited matter with its severe consequences might occur. The result of this treatment has been very satisfactory in numerous cases on record. Dogs which persistently refused food have taken their food with relish after a single application of this improvised stomach pump. Although the apparatus has been used only in the treatment of dogs, there is no reason why good results could not be obtained in the treatment of other domestic animals also.—*Der Thierarzt.*

FERMENT IN OATS, AND THEIR EFFECT ON DIGESTION.

By the Same.

Previous researches have proved that during the process of digestion, in such animals as partake of raw, unboiled food, especially grain, a certain starch ferment which these grains contain assists in that function; *i.e.*, a part of the digestion of starch taking place in the stomach is due to the action of the amylotic ferment found in the grains. We might be led in the same manner to suppose that a part of the digestion of albumen depends on the action of a ferment contained in plants. In order to decide this question, we have first to prove the existence of a proteolytic ferment of a given energy in the ordinary grain or oats, used as food for domestic animals. Repeated investigations have given the following principal results. When a pulp, prepared out of water and ground oats, is subjected for some time to a temperature equal to that of the stomach, three different ferments, amylolytic, proteolytic and lactic acid become active. These ferments of oats are destroyed at the boiling point, but remain active in the stomach of a living animal, which proves that these ferments are important factors in assisting digestion in the stomach of such animals as partake of their food in a raw state. Without doubt, the amylolytic ferment is the strongest, as the latest experiments have shown about two per cent. of sugar after three hours of digestion with water, and 0.2 per cent. of lactic

acid and 3.2 per cent. of sugar after seven hours of digestion. The lactic acid ferment is considerably weaker. After one hour's digestion 0.1 per cent., and after seven hours' digestion 0.2 per cent. of lactic acid were formed. The albuminoid ferment dissolved from the insoluble albumen of the oats about 0.5 per cent. in three hours, which would be one per cent. in from six to seven hours. In pulp made from the ground oats and water which had been subjected to a temperature of 212 degrees Fahrenheit, no lactic acid, no sugar and no solution of albumen were found. A 0.4 per cent. solution of lactic acid in water did not destroy the ferments or cause any change, but a 0.2 per cent. solution of hydrochloric acid almost entirely stopped the action of the ferments. Ice cold water stops fermentation as long as the water is kept cold, no sugar or lactic acid is found, but as the temperature rises the ferments commence to act.

These facts in relation to the diastacti ferment in oats are of practical and important value for the proper nourishment of man and beast in diseases of the organs of digestion. Patients suffering from imperfect digestion ought to receive the vegetable food in a raw state in preference to cooked. This accounts, to some extent, for the success of the vegetarians in the treatment of catarrh of the stomach, in liver troubles and in similar diseases. The food taken into the stomach in a raw state undergoes, in spite of the diminished quantity of gastric juice, a normal fermentative and digestive process, produced through the ferments in the raw food. If the food is taken in a cooked state, then it is subject to abnormal fermentations in the organs of digestion, which are apt to increase catarrh of the stomach. By cooking food, some nutritive matter is certainly rendered more soluble, and even dissolved; cooking is to some extent a predigestion, but nothing is gained by it for the patient. We know that by introducing dextrin and sugar, such as are formed by boiling or baking amylaceous articles of food, fermentation occurs a great deal quicker and more easily than if the starch were introduced in a raw state.

The grain eaters, a sect of vegetarians, adopt the habit of chewing the grain thoroughly, which is consequently well mixed

with the secreted saliva, forming a milk-like pulp easy to swallow and pleasant to the taste. The enourmous quantities of saliva, which are secreted and taken into the stomach act in a doubly beneficial manner on a sick stomach. In the first place the saliva being alkaline, saturates and combines with a part of the superfluous acid ferments, and in the second place the diastic ferment of the saliva coming in considerable quantity into the stomach materially aids digestion. The efficacy of the proteolytic ferment of the grain is increased through the secreted saliva. Consequently it is advisable to administer to both man and beast suffering from imperfect digestion certain vegetable foods, not cooked, but in a raw state, and, if possible, dry, so that thay may be well chewed and macerated before entering the stomach.

—*Der Thierarzt.*

PROFESSIONAL ITEMS.

UNITED STATES VETERINARY MEDICAL ASSOCIATION.

Editor American Veterinary Review:

The regular annual meeting of the United States Veterinary Medical Association will be held at the Rossmore Hotel, 42d St. and Broadway, N. Y., on Tuesday, Sept. 18th, at 10 A.M.

There will be a number of papers presented for discussion.

C. B. MICHENER, *Sec'y.*

BUREAU OF ANIMAL INDUSTRY.

Some changes are about to take place in the service of the Bureau of Animal Industry so far as New York State is concerned, Prof. Law being obliged to return to Ithaca to resume his lectures at Cornell University. His place has been filled by Dr. William S. Devoe. While all have followed with interest the work done by Prof. Law, and regret his retirement, still we should welcome Dr. Devoe, who, though a young man in the profession, has established for himself a reputation which he well deserves.

BIBLIOGRAPHY.

TREATISE OF THE NON-MICROBIAN PARASITIC DISEASES OF DOMESTIC ANIMALS (TRAITÉ DES MALADIES PARASITAIRES NON MICROBIENNES DES ANIMAUX DOMESTIQUES). By Prof. L. G. Neumann, of the Toulouse School.

Veterinary literature receives a valuable acquisition in this excellent work, and its preparation reflects great honor upon the author. It meets a want much felt, but now well supplied. It cannot fail to benefit all who will read it, both for the information embodied in the text, and the valuable documents either contained in the volume, or referred to in the bibliographical notes which it contains.

The work treats of domestic animals alone, and the arrangement of the subject is a very simple one. The diseases are grouped organ by organ, and occupy eight chapters.

The parasitic pathology of all the tissues is successively treated, under the various headings of parasites of the skin; of the digestive apparatus; of the serous membranes; of the respiratory system; of the circulation; of the muscles, the cellular tissue and the bones; of the nervous centers and organs of the senses; and of the genito-urinary apparatus. Some of the chapters are subdivided for the clearer treatment of the specialties of animal and of vegetable parasitism.

NEW DICTIONARY OF VETERINARY MEDICINE, SURGERY AND HYGIENE (NOUVEAU DICTIONNAIRE DE MÉDECINE, CHIRURGIE ET HYGIENE VETERINAIRE). Begun by H. Bouley and continued by Messrs. Sanson, Trasbot and Nocard.

No one will complain of the new departure adopted by the editors and authors of this excellent work. It started in life many years ago, the first volume having been issued in 1856, and that which we are now noticing being the fifteenth, but following its immediate predecessor within six months after that had passed through the press—a good example of despatch in business, especially as contrasted with former rates of progress in publishing enterprises.

This latest volume shows no falling off as to contents and contributors from the high standard of its predecessors.

The eminent and widely famed obstetrician, Mr. St. Cyr, contributes an article on *Parturition*, which occupies nearly one-third of the 750 pages which comprise the volume, and is none the less valuable and interesting for representing ideas similar to those which the same excellent writer has already promulgated in his work on veterinary obstetrics, hitherto published. The subject of *Pathology* also occupies a considerable portion of space. In this category Mr. Leclainche defines the diseases of the *Umbilicus*, and is responsible, as well, for articles on *Osteoclasty*, *Palpation* and *Paralysis*. Mr. Cardiot writes on the *Diseases of the Ear*, and mutually with Mr. Leclainche treats of the affections of the *Bony System*, while the *Osteological Anatomy and Physiology* are elucidated by Mr. Montané. *Diseases of the Ovaries* are incubated by Mr. Labat, and Mr. Trasbot is charged with the question of *Papillomas*. In his articles on the *Parasites of the Ear*, on *Parasites*, *Parasitism*, and *Parasiticides*, Mr. Railliet once more shows his mastery of these sparsely understood matters, while he also contributes to the extension of our knowledge of *Fowls*. *Surgical Practice and Operations* are explained by Mr. Peuch; *Onanism* (an erroneous name for *Masturbation*) by Leclainche; *Ozena* by Trasbot; and the *Hygiene of Sheep* by Sanson, which completes the series of valuable dissertations which may be consulted in this freshest of the series of what must be justly esteemed a standard authority in its department of knowledge.

The title of the work suggests an awkward query, in respect to its descriptive adjective, "*New*." If one may doubt the propriety of calling a work *new* which is nearly one-third of a century old, he may be met with a demand to explain how that can be *old* which is still unfinished. The conundrum is easily disposed of, but we leave it for others to grapple withal.

SOCIETY MEETINGS.

NEW JERSEY STATE VETERINARY SOCIETY.

The annual meeting of the New Jersey State Veterinary Society was held on Saturday, August 4th, 1888, at Hotel Shelburne, Long Branch, N. J., with Dr. J. C. Corlies, President, in the chair.

The Secretary called the roll, which was answered by a fair number of veterinarians from various parts of the State.

The Secretary then read the minutes of the previous meeting, which were adopted as read.

The President then read his annual address, in which he spoke of the past, present and future of the veterinary profession in New Jersey, at the end of which he was loudly applauded.

The annual election of officers resulted as follows: President—Dr. J. C. Corlies, of Newark, re-elected. 1st Vice-President—Dr. Theodore Declyne, of New Durham. 2d Vice-President—Dr. Eldon L. Loblein, of New Brunswick.

Dr. W. H. Lowe, of Paterson, was proposed as candidate for Secretary, but he refused to be a candidate as he had held the office for a number of years. His name was withdrawn in favor of Dr. Charles Kuehne, of Jersey City, who was elected to that office.

Dr. Joseph F. Autenreith, of Jersey City, was elected as Treasurer. Dr. Andrew Sherk, of Newark, Dr. Joseph Nayles, of Jersey City, Dr. Elmore R. Mercer, of Montclair, and Dr. Matthew A. Pierce, of Paterson, were re-elected as the Board of Censors.

D. J. S. Sutcliffe, of Middletown, N. Y., read a very interesting paper on "Hernia," and also one on "Rumenotomy." He spoke of several interesting cases which came under his observation. He was tendered a vote of thanks.

The Society adjourned, to meet at Jersey City on November 1st, 1888.

After adjourning the members held their annual banquet, which was well attended.

CHARLES KUEHNE, Ph.G., D.V.S., *Secretary.*

CONNECTICUT VETERINARY MEDICAL ASSOCIATION.

A regular meeting was held at the Gentlemen's Driving Club Rooms, Hartford, on Tuesday, March 6th.

The following members were present: Messrs. Gardner, Hyde, Parkinson, Tuttle, Tibbals, Bridges and Beckley.

Mr. D. W. Thrall, State Agent of the Humane Society, and Mr. James H. Parker, President of the Gentlemen's Driving Club, were also present by invitation.

In the absence of the President, Vice-Presidents and the Secretary, Dr. Bridges was appointed Chairman and Dr. Beckley Secretary.

The subject of Glanders and the proper methods for its extermination was freely discussed, Messrs. Thrall and Parker participating.

It was hoped that the Humane Society would push this matter of glanders legislation and have a suitable law enacted giving them full control in such cases.

Mr. Thrall said it was utterly impossible for the Society to handle the matter, as it would necessitate the appointment of a special officer and greatly increase their expenses, which rightfully belong to the State; but he promised to give us all the support that lay in his power in bringing about a suitable legislative enactment.

It was voted that the meeting adjourn to the 20th day of March, and be held in the same rooms, at 7:30 in the evening.

The adjourned meeting was held at the time and place specified, and the following members responded to roll call: President E. A. McLellan, Messrs. Sturges, Gardner, Hyde, Bridges and Bland.

The subject of the previous meeting was discussed at great length, and resulted in the appointment of a committee composed of Messrs. Gardner, Sullivan and Bland.

The said committee being instructed to write to the different State Veterinarians and ascertain what authority is vested in them specially relating to glanders. Also to draft a suitable law to present for consideration at next meeting.

The following resolutions on the death of one of our esteemed members, Dr. A. L. Brown, were unanimously adopted:

Whereas, This Association has sustained a loss by the death of one of its members, Dr. A. L. Brown, therefore

Resolved, That our profession in this State has lost a useful, an honored and a respected member, one who was faithful to every duty and was in the highest degree deserving our consideration and our regard.

Resolved, That we shall ever cherish his memory, as a man worthy of his profession, worthy of the admiration of his associates, and worthy of our lasting remembrance.

Resolved, That these resolutions be entered upon our minutes, and an engrossed copy forwarded to his family.

The meeting closed with a promise from the Secretary to read a short paper at next meeting on "Canine Distemper."

THOS. BLAND, *Secretary.*

The last meeting of this Association was held at the Scovill House, Waterbury, on Tuesday, the 5th day of June, the President, Dr. E. A. McLellan, in the chair.

Present—Messrs. Ross, Parkinson, Sturges, Tuttle, Gardner, Bridges, Hyde, Beckley and Bland.

Communications were read from Prof. Liautard and Dr. A. M. Farrington, acting Chief of the Bureau of Animal Industry. There was also a very lengthy and finely written communication from Dr. Nathan Tibbals, of New Haven, on the subject of "Glanders." The committee on glanders legislation was not prepared to make a report, but promised to do so at next meeting.

Dr. Bridges proposed the name of Dr. A. C. Hexhamer, of Stamford, for membership.

The following gentlemen were elected to office for the ensuing year: President—Julian E. Gardner. 1st Vice-President—A. D. Sturges. 2d Vice-President—Geo. Bridges. Secretary—Thomas Bland. Treasurer—Nathan Tibbals. Messrs. E. C. Ross, Andrew Hyde, E. A. McLellan, E. M. Beckley and A. A. Tuttle, Censors.

Thomas Bland read a paper on "Canine Distemper," which was duly discussed.

Dr. Bridges will read a paper on "Parturient Apoplexy" at next meeting, which will be held on Tuesday, the 4th day of September, in New Haven.

THOS. BLAND, *Secretary.*

OHIO STATE VETERINARY ASSOCIATION.

The semi-annual meeting was held in the Cincinnati Music Verein Hall at Cincinnati, July 26th.

The meeting was called to order at 11:15 A. M. by the President, Dr. J. S. Butler, who made a few appropriate remarks.

Twenty-five members answered roll call. The minutes of the previous meeting were read and approved.

The name of E. H. Shepard was proposed for membership, and being a graduate he was unanimously accepted.

Dr. Derr, of Sidney, then read an essay on "Azoturia," and Dr. J. C. Meyer, Sr., one on "Antifebrin." Dr. Fair, of Berlin, read a paper reporting some cases of pleuro-pneumonia in horses which came under his observation.

Dr. J. S. Butler referred to a case of tuberculosis in an eleven-months-old calf, whose lungs weighed 32 pounds; also to an enlarged spleen of a horse, the organ weighing 55 pounds.

Dr. Meyer, Sr., referred to a similar case in which the spleen weighed 79 pounds.

Dr. J. S. Butler also reported the result of his investigation of maladie du coit in Illinois.

The above subjects were discussed, most of those present taking part in the discussion.

The constitution and by-laws were so revised that none but graduates from a recognized college can be admitted into the Association. It was also arranged that the annual meeting hereafter shall be held at Columbus.

Drs. Derr and Meyer were requested by the Association to send a copy of their papers to the AMERICAN VETERINARY REVIEW and *Journal of Comparative Medicine and Surgery*, for publication.

The meeting then adjourned, after which the members dined together, spending a pleasant time.

G. W. BUTLER, *Corresponding Secretary.*